

DEVELOPMENT OF "ALIN GESIT" LEARNING MEDIA FOR COMPUTER ACCOUNTING SUBJECT

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ABSTRACT

This research aimed to evaluate the feasibility of "Alin Gesit," a Google Sites-based learning media for online accounting computer courses. Using the ADDIE method, we analyzed student and teacher needs, designed and developed the media, and assessed it through expert evaluations and student-teacher feedback. The study involved twelfth-grade accounting students from a vocational school in East Java. Results showed that "Alin Gesit" scored 84% from media experts and 94% from material experts. A paired T-test ($p=0.003$) confirmed significant improvement in student scores. Additionally, students rated the media highly (3.7), indicating its effectiveness.

Keywords: Accounting Computer; ADDIE Method; Google Sites; Learning Media

ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi kelayakan "Alin Gesit", media pembelajaran berbasis Google Sites untuk kursus komputer akuntansi online. Dengan menggunakan metode ADDIE, kami menganalisis kebutuhan siswa dan guru, merancang dan mengembangkan media, dan menilainya melalui evaluasi ahli dan umpan balik siswa-guru. Penelitian ini melibatkan siswa akuntansi kelas dua belas dari sebuah sekolah kejuruan di Jawa Timur. Hasil penelitian menunjukkan bahwa "Alin Gesit" memperoleh nilai 84% dari ahli media dan 94% dari ahli materi. Uji-T berpasangan ($p=0,003$) mengkonfirmasi peningkatan signifikan dalam nilai siswa. Selain itu, siswa menilai media tersebut dengan tinggi (3,7), yang menunjukkan keefektifannya.

Kata Kunci : Komputer Akuntansi; Metode ADDIE; Google Site; Media Pembelajaran Daring

JEL Classification: O32



ASSETS
Jurnal Akuntansi dan Pendidikan
Vol. 13 No. 2
Page 113-129
Madiun, August 2024
p-ISSN: 2302-6251
e-ISSN: 2477-4995

Article History
Submitted:
February 2, 2024
Accepted:
August 22, 2024

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INTRODUCTION

The use of technology and communication continues to grow in various aspects of life, including in the field of education. Learning media is revolutionizing education through technological advancements. Technology-based learning media facilitates teachers in delivering materials efficiently, making the learning process effective and efficient (Firmadani, 2020). Devices used by students today, such as tablets, cellphones, smartphones, and other portable electronic devices, have quite a significant opportunity to be used as learning media (Mayer, 2020). Mobile-based learning is effective since students can learn anything from anywhere and anytime and can access material quickly (Radhakrishnan, 2021). The use of technology in learning that supports the implementation of 21st-century learning needs to be developed to meet student needs (Talakua et al., 2020). The use of mobile-based learning technology has a significant impact on the development of high-level thinking (critical thinking), teamwork (collaboration), dynamic management (creativity), and affective communication (communication) among students (Ahmad et al., 2020).

21st-century learning is expected to involve technology, behavior, and moral values and emphasize critical thinking, communication, and creative skills, which is challenging in the learning process (Prayogi, 2020). International curricula and policy directions call for embedding critical thinking in all disciplines. However, conceptually, theories that discuss the concept of integrating critical thinking in learning in various fields of science still need to be completed (Monteleone et al., 2023). Unfortunately, a significant number of teachers continue to employ instructional materials that do not foster the development of critical thinking, creativity, and communication skills as a result of inadequate innovation in teaching and the failure to leverage information technology-based learning resources (Basori et al., 2023).

The use of technology in teaching can help correct the need for more innovation in the teaching and learning process (Ramasundrum & Sathasivam, 2022). Nowadays, digital learning media continue to develop because they have the advantage of graphic presentations with an attractive appearance, which can be manipulated in the form of visual representations. Technology can help create digital-based learning media, which can then be used in the learning process (Ningsih & Bukit, 2022). Mobile-based learning media, in line with technological developments and widely used by students, need to be developed so that they can increase students' interest in being involved in learning. It is because those media are more exciting and interactive (Kao et al., 2023).

For these reasons, the researcher aims to develop and evaluate the feasibility of learning media for computer accounting subjects using Google Sites. The goal is to enhance student learning outcomes and provide students with the flexibility to learn anywhere through Google Sites-based learning media. The researchers chose Google Sites-based learning media because the application of technology in the learning process is the use of Google Sites to improve learning (Anh & Truong, 2023). Google Sites is a digital application that is easy for students to create and use (Lutfiah, 2023). Google Sites-based e-learning media is excellent and ready to be used to support learning activities (Sandra et al., 2021).

Research has yet to be conducted on the use of Google Sites in learning, and it has not examined its use as learning media for computer accounting subjects using accurate accounting computer applications. Therefore, this research was conducted to develop Google Sites as learning media for computer accounting subjects with accurate online programs to enhance grades and skills for vocational high school students.

The observations highlight the necessity for research and development of Google Sites-based learning media to enhance the competencies of vocational school students.

This media will be developed for mobile platforms to support blended learning. In vocational schools, the blended learning system accommodates students participating in Industrial Internships or Field Work Practices (PKL) while continuing their studies at school. Therefore, there is a continuous need for effective learning media in blended learning environments.

The development of this learning media used the ADDIE method. The ADDIE model is the most popular model used for creating learning materials; ADDIE is an acronym for *Analysis, Design, Development or Production, Implementation, and Evaluation* (Dick et al., 2005). The use of ADDIE for the development of learning media is valuable and dynamic. It also supports the application of the learning developed (Rahma et al., 2021). The ADDIE model can be used as a basis when creating online learning media that pays attention to student needs, can combine various learning theories, and can apply various teaching methods (Battle, 2019).

This research and development are innovative compared to previous studies. We aim to develop learning media specifically for computer accounting subjects, particularly for accurate accounting computer applications. In contrast, earlier research predominantly used Google Sites for science and mathematics subjects. This research developed Google Sites as learning media for computer accounting subjects with an accurate online program called "Alin Gesit". Alin Gesit is an acronym for *Belajar Accurate Online berbasis Google Sites*. Through the development of this media, it is expected that the media developed by the researchers will be feasible to be used and can contribute to improving the critical thinking skills and creativity of vocational high school students. It makes learning computer accounting more enjoyable and allows it to be studied anywhere, anytime.

Therefore, it is essential to develop mobile learning-based media that align with current technological advancements and are widely used by students. Mobile-based media are more engaging and interactive, which can increase students' interest and involvement in learning.

METHOD

Table 1. Assessment Instrument for Media Experts

No	Reviewed Aspect	Indicator
1	Display	1.1. Application/media introduction 1.2. Ease of media use 1.3. Completeness of instructions for media use 1.4. Application display
2	Application Control	2.1. Application help 2.2. Application closing
3	Principles of Multimedia	3.1. Use of text 3.2. Use of multimedia elements 3.3. Material presentation flow

Source: Developed by Smaldino et al. (2008)

This research used the Research and Development method, using the ADDIE model (Figure 1), to develop computer accounting learning media called "Alin Gesit". This research focused on measuring the feasibility of "Alin Gesit" learning media. The population and sample were 30 students, and the research was conducted at SMKN 2 Jiwan Madiun. The data were collected using questionnaires and observations, as well as assessments from the media and material experts. The instrument used by media



experts consists of several evaluation elements, namely display, application control, and principles of multimedia. This instrument is based on (Smaldino et al., 2008). The media expert instrument is presented in Table 1.

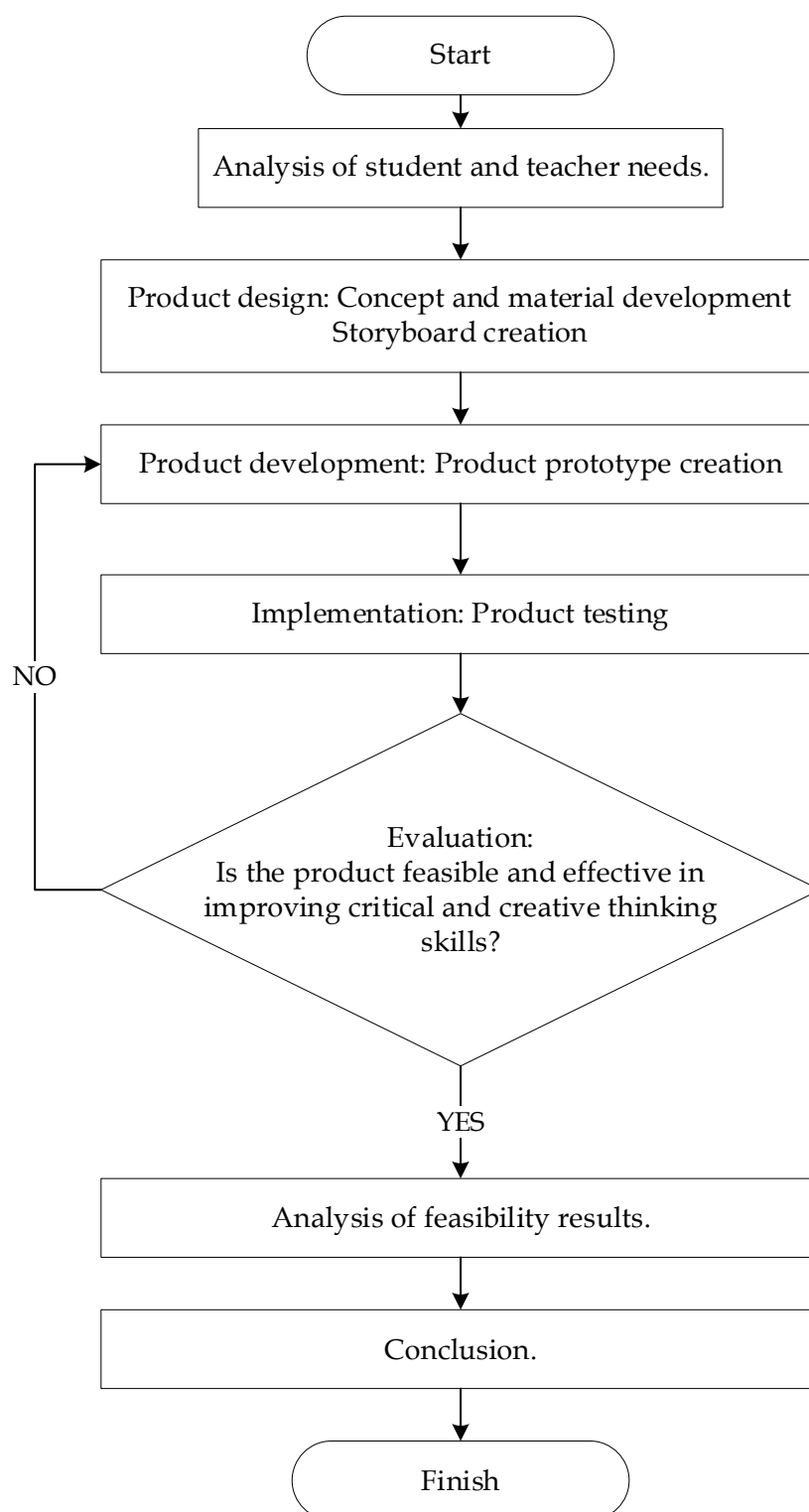


Figure 1. Development Research Flow Diagram

The instrument used by subject matter experts consists of several evaluation elements, namely introduction, content, evaluation, and closing. It is based on Arsyad (2013). The media expert instrument is presented in Table 2.

Table 2. Assessment Instrument for Material Experts

No	Reviewed Aspect	Indicator
1	Introduction	1.1. Clarity and Directness of Instructions 1.2. Clarity of competency/Learning Objective and learning steps
2	Content	2.1. Suitability of material with Learning Objective 2.2. Clarity/coherence of the material presented 2.3. Depth/focus of the material presented 2.4. Ease of material understanding
3	Evaluation	3.1. Clarity of question 3.2. Provision of feedback 3.3. Level of question difficulty
4	Closing	4.1. Summary 4.2. References

Source: Developed from (Arsyad, 2013)

The data analysis used descriptive analysis. The percentage for each category was found using the following percentage formula.

$$P = F / N \times 100 \dots\dots\dots(\text{Equation 1})$$

Description:

P = percentage

F = frequency of observations

N = number of respondents

After the assessment by subject matter experts and media experts was completed, the researcher conducted an analysis using the first formula. The researcher then presented the results of this analysis according to the feasibility criteria outlined in Table 3.

Table 3 . Feasibility Level Criteria

Category	Percentage	Qualification	Equivalent
A	81% to 100%	Very Valid Valid	Very Feasible
B	61% to 80%	Fairly Valid	Feasible
C	41% to 60%	Not Valid	Fairly Feasible
D	21% to 40%	Very Not Valid	Not Feasible
E	< 21%		Very Not Feasible

Source: Arikunto (2010)

Table 4. Criteria for Determining the Level of Effectiveness

N Gain Score	Interpretation
< 40	Ineffective
40 s.d 55	Less Effective
56 s.d 75	Moderately Effective
> 76	Effective

Source : (Sukarelawa et al., 2024)



The effectiveness of learning media is measured through pre-test and post-test scores, along with observations made during classroom implementation. The effectiveness is calculated using the N-Gain formula (Table 4).

$$N \text{ Gain} = (\text{Posttest Score} - \text{Pretest Score}) / (\text{Idea Score} - \text{Pretest Score}) \dots\dots\dots (\text{Equation 2})$$

The next step is to test the difference in pre-test and post-test results. However, before performing the T-test, it is essential to conduct a normality test. The selected statistical test is the Independent Sample T-test. If the significance value (2-tailed) from SPSS is less than 0.05, it indicates no significant difference between the pre-test and post-test averages. Conversely, if the significance value is more significant than 0.05, it indicates a disparity in the averages.

RESULT AND DISCUSSION

Analysis Stage

At this stage, the researchers carried out observations, interviews, and questionnaire distribution to find the students' and teachers' needs related to the learning media preferred by the students and teachers.

Analysis of student needs

Analysis of student needs was conducted on the basis of data collected through interviews and questionnaires. Interviews were carried out while the researcher was teaching in a relaxed and informal setting, allowing students to express their opinions freely and comfortably. The results of the interviews were: 1) Computer accounting subjects that used an accurate online application program in learning the material for inputting trading company transactions were highly appealing to students. It is in line with Kotb et al. (2019), which states that accounting computer courses are quite popular among students because they understand that accounting graduates with IT knowledge and skills will have better job opportunities.

It was due to the fact that students perceived the necessity of developing this skill and preparing for future employment (Qasim & Kharbat, 2020). 2) Accounting computer subjects were quite interesting for students as they had the opportunity to engage in the practical application of trading company transactions; this is consistent with the research by Utama & Pratama (2020), which states that students from vocational high schools in the accounting program are expected to have skills in operating accounting software for preparing financial reports. However, the teacher's reliance on PPT as the sole medium of instruction limited the students' engagement. There was a growing expectation among students for more engaging learning methodologies. 3) The advent of learning media has been anticipated to offer a more engaging experience for students, with the potential to utilize smartphones to facilitate learning at any time. It is in line with Yunjo (2021), who states that advancements in technology and mobile devices have significant potential for the development of learning media. Additionally, they provide authentic, personalized, student-centered learning experiences and allow learning to occur at the right time and place.

The needs analysis interview concluded that the teacher had yet to employ a diverse array of learning media. The teaching method in class remained largely reliant on lectures, with the subject matter presented for students limited to the content found in textbooks from the library. Many students have an Android device, so they express a preference for the integration of Android-based learning media, which would provide them with access to pictures, videos, or games anytime and anywhere.

In addition to interviews, researchers also distributed questionnaires to students to obtain their opinions on the desired learning media. The questionnaire's analysis result is shown in Table 5.

Table 5. Results of Analysis of Student Learning Media Needs in Questionnaire

Questions	Response (%)	
	Yes	No
Do you often use your smartphone device to access learning media?	8	92
Is it essential to have computerized learning media for accounting?	100	-
Do you agree if the learning media in the subject of Computer accounting can be accessed via smartphone	97	3

Table 5 shows that 92% of students rarely access learning media through smartphones. Additionally, 100 % of students consider it very important to have technology-based learning media in accounting subjects. Among the respondents who completed the questionnaire, 98% agreed that accounting learning media should be accessible via mobile phones.

Table 6. Results of Analysis of Student Needs about the Media Base

Questions	Student Response (%)	
	Smartphone	PPT
What kind of learning media do you prefer	92	8

Table 6 shows that the majority of students prefer smartphone-based learning media over PowerPoint-based learning media. 92% of students chose smartphone-based learning media, while 8% preferred PowerPoint-based learning media.

Table 7. Result of Analysis of Student Needs About Interesting Media

Questions	Student Response (%)			
	Video	Picture	Text	Games
What kind of learning media is interesting for you?	30	48	6	16

Based on Table 7, it shows that students prefer engaging learning media, with 30% favoring video representations, 48% favoring images, 16% favoring games, and 6% favoring written content. The results of the student needs analysis indicated that students demanded learning media that was engaging, incorporated image and video representations, and was compatible with smartphones. This finding aligns with Pollock et al. (2023), who stated that video presentations can facilitate students' understanding of the concept of material easily.

Analysis of teacher needs

Teachers play a significant role in the classroom learning process, and it is hoped they can create engaging, student-centered learning experiences (Omenge & Proscak, 2016). Current technological advancements make students more familiar with developments in technology, information, and communication (Rasyid & Gaffar, 2019). Therefore, teachers are expected to compensate for this by using learning media that suits students' needs and is integrated with information and communication technology (Capuno et al., 2019).

Interviews regarding teachers' needs revealed that teachers are enthusiastic about using Android-based learning media, making smartphone use more effective for learning. However, during lessons, teachers felt they needed to fully explore learning

media, as they mainly used PowerPoint and YouTube videos. The primary challenge teachers face is the large number of tasks they must complete, which hinders the optimal creation of learning media.

Design Stage

At this design stage, the researchers determined the population, took samples, prepared a schedule, and created a storyboard for the product. This preparation stage included activities to prepare learning materials, assessment, and evaluation tools. At this stage, the researchers began developing a product draft, including learning materials, handbooks, and evaluation tools. They also began developing a product consisting of instructions for using the product, teaching materials or e-modules that would be inserted, and learning videos.

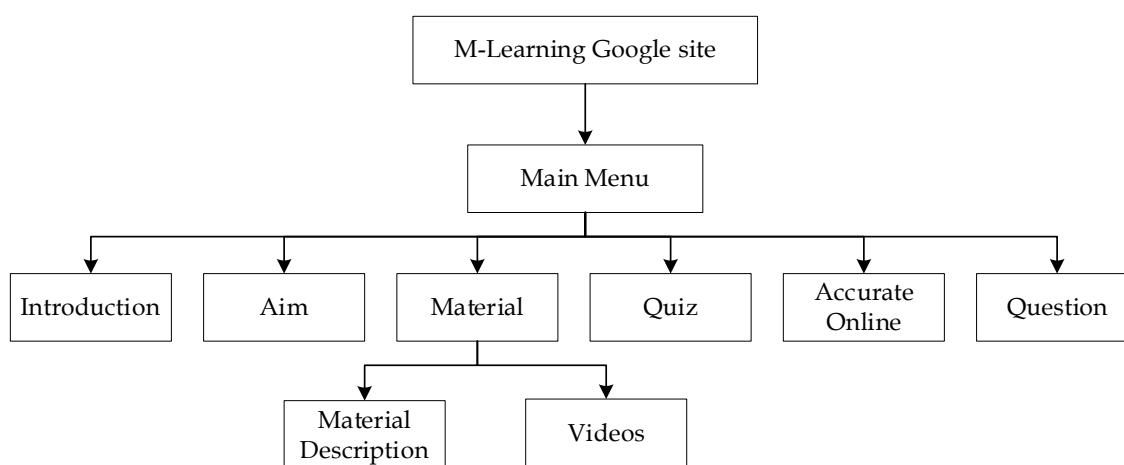


Figure 2. Learning Media Design

Development Stage

At this stage, the researchers prepared the materials for the learning media. The media were developed using several applications, which were combined with Google Sites. Creating interactive learning media requires attention to several factors, including the appearance of the learning material, the language used, the level of interactivity, and the benefits for the media users. The media development that has been carried out is shown in Figure 3.

The researchers carried out a final revision to the product that had been developed based on feedback from the media experts, material experts, trial groups, and field practitioners. The media experts consist of two individuals. The first validator is a Google Instructor, a national award-winning teacher in learning media innovation competitions. Also, it serves as a reviewer, editor of national books on vocational school productivity, and a practitioner in teacher movement practices. The second media expert is a digital literacy activist from the Madiun district, a Google Certified Educator Level 2, and a facilitator of teacher movements.

Two experts conducted material validation. The first expert is an accounting lecturer and a resource person for Accurate Online. The second expert is a computer accounting teacher and a BNSP assessor for Accounting competencies. This evaluation and revision were carried out to enhance the feasibility of "Alin Gesit" as a learning media before it was tested on a larger population. It aimed to confirm its suitability and feasibility for use in learning.

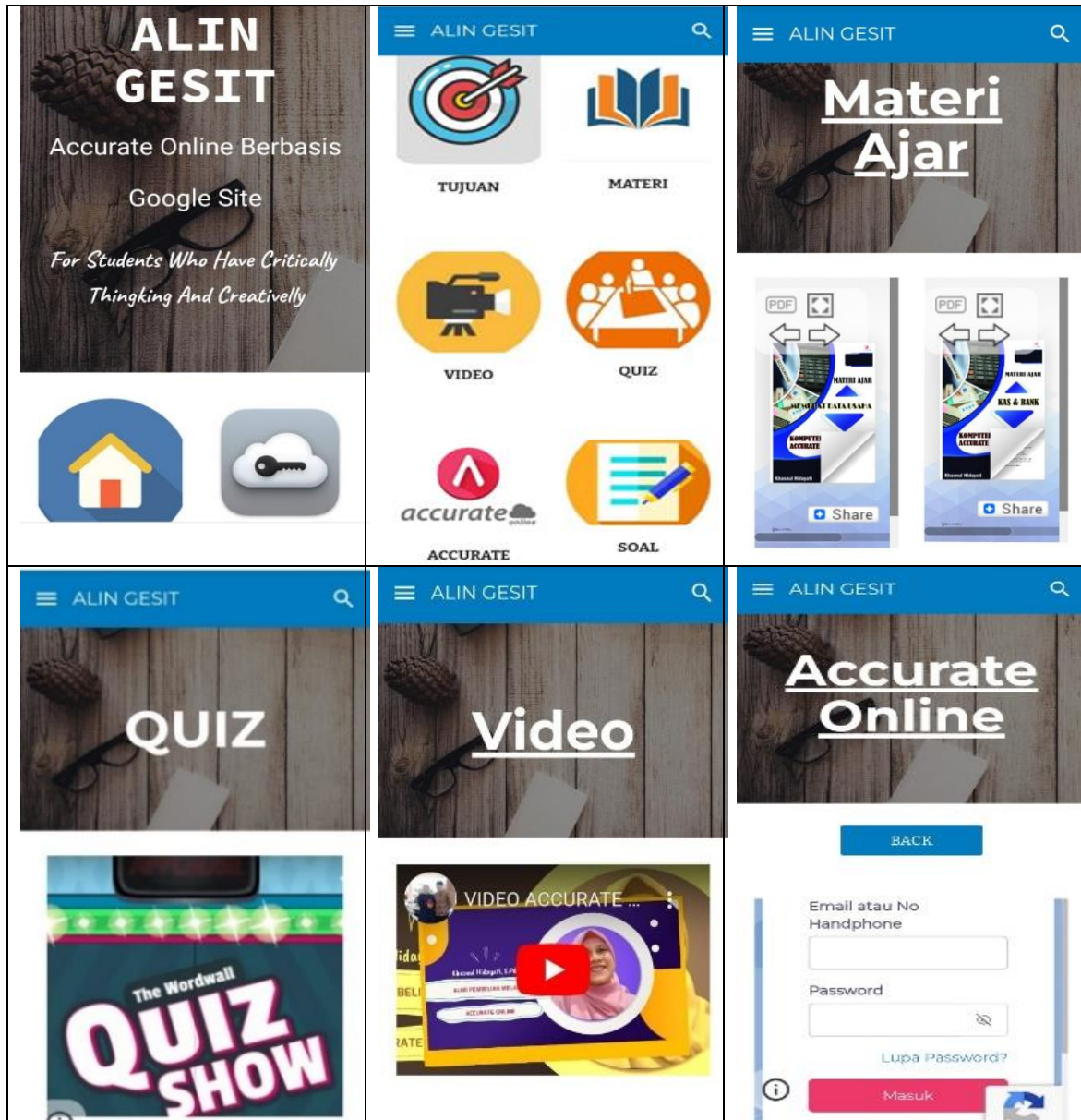


Figure 3. Learning Media Menu on Google Sites

Validation Results from Media Experts

Table 8. Validation Results from Media Experts

Media Expert	Assessment Aspects %				Average Score	Conclusion
	Application Introduction	User Control	Application Display	Multimedia Design Principle		
Media Expert 1	90	80	71	85	81	Very Feasible
Media Expert 2	90	90	77	90	87	Very Feasible
Average Score	90	85	74	87.5	84	Very Feasible

The media experts validated four aspects: application introduction, user control, application display, and multimedia design principle. Table 8 shows that the "Alin Gesit" learning media developed by the researchers was "very feasible", receiving a score of 84%. The application introduction aspect received an average score of 90% from media experts 1 and 2, while the user control aspect received 85%, the application display aspect received 74%, and the multimedia design principle aspect received 87.5%.

Validation Results from Material Experts

The material was assessed in three aspects: introduction, content, and evaluation. Table 9 presents the validation results from the material experts, which were 'Very Feasible' with a score of 93%. The introductory material achieved a validation score of 95%, while the content, including teaching materials and video tutorials, received a score of 92%. The evaluation aspect also scored 92%.

Table 9. Validation Results from Material Experts

Expert	Assessment Aspects			Average Score	Conclusion
	Introduction	Content	Evaluation		
Material Expert 1	95	96	100	97	Very Feasible
Material Expert 2	95	88	84	89	Very Feasible
Average Score	95	92	92	93	Very Feasible

The results of this feasibility study were in line with research by Putri (2021), which stated that in research on the development of Google site media, an assessment with a very feasible category from material and media experts was obtained. Research conducted by Sitepu & Herlinawati (2022) on the development of web media Google site ion material also obtained a decent assessment in terms of language, presentation, and graphics. Research conducted by Basuki and Saiful (2020) found the same thing that android-based E-learning media for students majoring in office administration received a very decent score because the media was easy to use. The material was also tailored to the needs of students.

The results of data processing carried out by researchers were largely consistent with several previous studies, which stated that learning media received a very worthy assessment from media experts and material experts. It was because Google site-based learning media was easy to use on Android without the need to install the application first (Basori & Jufri, 2024). In addition, this Google site-based learning media could also accommodate displays in the form of text, images, and videos, providing learners with a comfortable environment and the flexibility to learn anytime and anywhere (Jeyarajaguru, 2023).

Implementation Stage

At this stage, the researcher conducted observations with the assistance of colleagues who teach accurate online accounting computers. At the first meeting, the researcher provided pre-test questions and introduced the learning media "Alin Gesit". The material presented at the first meeting was about setting up general company data. The learning material was encapsulated in a learning module in the form of a colorful flipbook so that it could attract students' attention and facilitate the stimulation of the initial data setup process in accurate online software.

The activities carried out during the second meeting introduced trading company transactions, including purchases, sales, and payments. The material taught was contained in the learning media "Alin Gesit". At the end of the learning process, which

was framed in the quiz model, students could read the material in the module, watch buying and selling videos via YouTube, and engage in ice-breaking activities, such as playing games.

In the third meeting, the researcher was instructed to engage in a series of activities related to trading company transactions, starting from the initial setup of the company, continuing with the inputting of company transactions, and concluding with the financial statements. At the end of the learning process, students were required to complete a post-test to assess their knowledge of online accuracy. At this stage, the students were given various tutorials and questions directly related to the company. Materials and exercises derived from objective transaction evidence were made, allowing students to understand more quickly as accounting procedures were in accordance with actual company activities (Stütz et al., 2022). Tutorials in the form of materials would also make it easier for students to understand the procedures for using accurate online (Putra & Susilowibowo, 2021).

Evaluation Stage

The trial results were obtained from the pre-test and post-test. The testing was conducted using the N-Gain and T-tests. From the results of Table 9, the average pre-test score was 59.83, and the average post-test score was 92.5. The two-tailed P ($T \leq t$) of 0.003 indicates a significant difference between the pre-test and post-test scores. Therefore, it was concluded that the 'Alin Gesit' learning media effectively increased the score of the computer accounting subject. Based on the N-Gain score calculation, the average N-Gain score is 65.2992 or 65.3%, which falls into the moderately effective category.

Table 9. N-Gain for Pre-test and Post-test

Description	Statistic	Std. Error
Mean (95% Confidence Interval for Mean)	65,2992	4,18163
Lower Bound	57,0232	
Upper Bound	73,5751	

Table 10. Results of paired two sample T-test

Description	Pre-Test	Post-Test
Mean	59,83	92,5
Variance	218,07	37,5
Observations	30,00	30
Pearson Correlation	0,28	
Hypothesized Mean Difference	0,00	
df	29,00	
t Stat	-12,51	
P($T \leq t$) one-tail	0,00	
t Critical one-tail	1,70	
P($T \leq t$) two-tail	0,003	
t Critical two-tail	2,05	

From Table 10, the average pre-test score is 59.83, and the average post-test score is 92.5. The P-value (P($T \leq t$) two-tail) obtained is 0.003 (< 0.05). It indicates a significant difference between the pre-test and post-test scores, suggesting that the "Alin Gesit" learning media is efficacious in improving the scores in accounting computer subjects.

The researchers tested the effectiveness of the 'Alin Gesit' learning media by analyzing learning outcomes, specifically by comparing the average pre-test and post-test scores. The average results of the pre-test and post-test are shown in Figure 4.

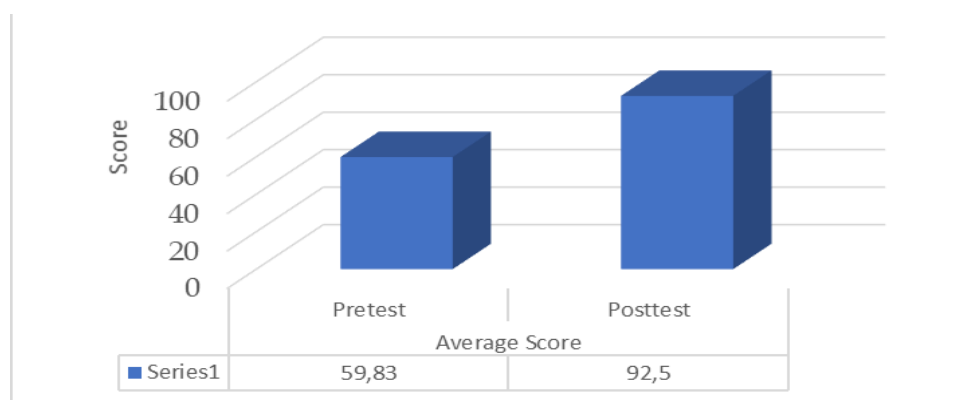


Figure 4. Pre-Test and Post-Test Scores

Based on the figure above, there was a significant change in the average score. The pre-test average was 59.83, while the post-test average increased substantially to 92.5. This research was in line with the findings of those who found an improvement in student grades prior to and during the use of Google sites-based learning media (Ningsih & Bukit, 2022). Classroom Action Research conducted by Basori & Jufri (2024) also revealed the same finding where informatics learning with the help of learning media based on Google sites could increase student learning motivation, allowing improvement in learning outcomes in each cycle. Research conducted by Parmar et al. (2020) also stated that there was an increase in the scores obtained by students from the pre-test to the post-test because students were motivated and facilitated by the media in learning.

This was also in line with research done by Anh & Truong (2023) which explained that the post-test results of classes that used Google sites as learning media were higher than the post-test results of classes that did not use Google sites as the learning media. Similar research was also conducted by Prayudi and Anggriani (2022), who observed the difference in the average pre-test and post-test when using Google site-based learning media. It found that the average pre-test score was 50 while the average post-test score was 90. The same study conducted by Allahawiah et al. (2023) found that Google site applications positively impact the academic achievement and social intelligence of students.

The researcher also collected data on student responses to the 'Alin Gesit' learning media with the hope of providing feedback for its improvement. Students were given a closed-ended questionnaire with a scoring range of 1- 4. The student's evaluation of the media consists of material, presentation, language, and benefit. Data analysis was conducted using the following formula:

$$\text{Percentage of Student Responses} = (\text{Student's Score} / \text{Ideal Score}) \times 100\% \dots (\text{Equation 3})$$

Table 11 shows the diverse responses from students regarding the learning media they used. Most students gave positive feedback on the 'Alin Gesit' learning media. The researcher also presents the graph of student responses to the learning media in Figure 5.

Table 11. Recapitulation of Student Responses to Learning Media

Participant	Material	Presentation	Language	Benefit
1	4	3	3	3
2	4	3	3	3
3	3	3	3	3
4	4	3	3	3
5	4	4	4	4
6	4	3	3	4
7	4	4	4	2
8	4	3	3	3
9	4	4	4	4
10	4	4	4	4
11	4	4	4	4
12	4	3	3	4
13	4	4	4	4
14	3	3	3	3
15	4	4	4	4
16	3	4	4	4
17	3	3	3	3
18	4	4	4	4
19	4	3	3	3
20	4	4	4	4
21	4	4	4	3
22	4	4	4	4
23	3	4	4	4
24	4	4	4	4
25	3	4	4	3
26	3	4	4	3
27	4	3	3	3
28	3	3	3	3
29	4	4	3	3
Participant Score	108	105	105	103
Ideal Score	120	120	120	120
Percentage	90	88	87	86

The student's assessment of the "Alin Gesit" learning media is very positive, both in terms of material, presentation, language, and benefits. This is consistent with the research conducted by Songkhro et al. (2022), which states that students give excellent ratings to learning media because learning using Google Sites allows students to better understand and remember the material. Similar research by West & Malatji (2021) explains that students feel comfortable learning using Google Sites.

CONCLUSION

Google Sites-based learning media in accounting computer subjects was found to be a viable option. It was based on the results of the validation process involving experts in the field of media and material development, who deemed the media to be a valid and feasible learning tool at SMK. In addition, "Alin Gesit" learning media has also been tested in schools in Madiun. The results of limited trials and broad trials stated that the "Alin Gesit" learning media was declared a valid and feasible tool. Based



on this assessment, it was concluded that the development of learning media based on Google Sites was deemed valid and feasible as a learning media in accounting computer subjects.

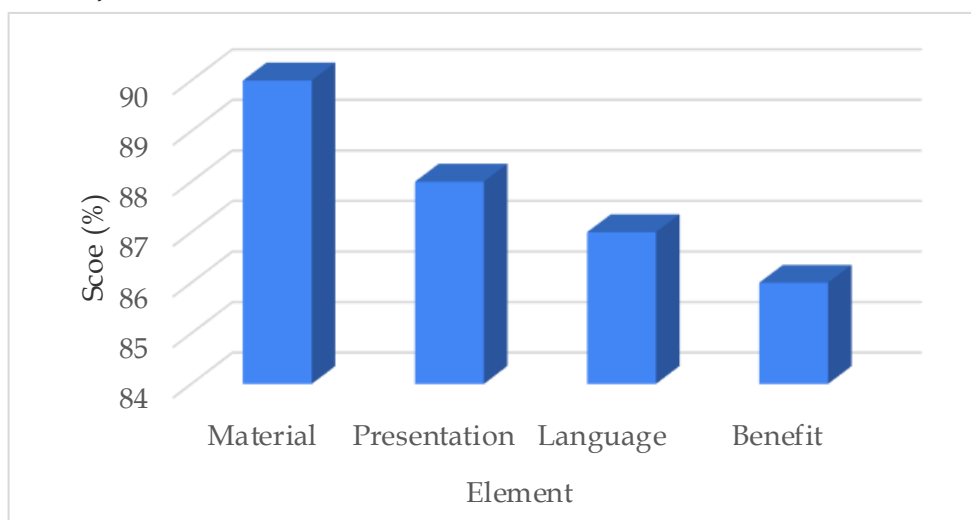


Figure 5. Student Response to Learning Media

Google Sites-based media development has a positive impact on learning for both students and teachers. For students, this application has the potential to facilitate independent learning and provide ease of use on various devices, such as smartphones, personal computers, and laptops. This feature enables students to learn and practice accounting transactions anywhere and anytime. For teachers, Google Sites-based learning media can be used as a more exciting learning medium. It also facilitates teachers to be more creative in teaching by utilizing various available learning materials.

Google Sites-based learning media do not require large storage capacity because they are created in online mode. However, these media must be operated using an internet data quota. It is recommended that other researchers design similar media offline so that internet data quotas are not required for their operation.

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